

# Intelligent Solar Charge Controller

## User's Manual

### CM5024Z, CM5048



## Catalogue

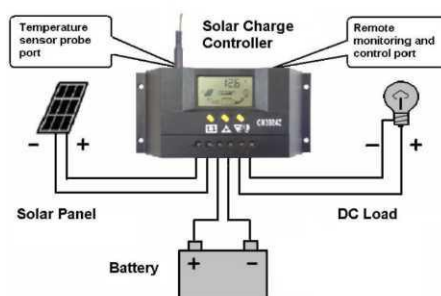
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### 1. Product Introduction

CM series controller is a kind of intelligent, multi-purpose solar charge and discharge controller. The family use the fixed LCD display, with a very friendly interface; various control parameters can be flexibly set, fully meet your various application requirements. CM series controller has following features:

- Simple button operation
- Image of LCD graphic symbol
- Automatic Identification System Voltage level
- Intelligent PWM charge mode
- Automatic Temperature Compensation
- Adjustable charge-discharge control parameters
- Settable Operating mode of Load
- Accumulated function of charge and discharge Ampere hours
- Remote monitoring and control function (custom)
- Battery reverse-discharge protection
- Battery Low Voltage Disconnection (LVD)
- Battery reverse connection protection
- Overload, Short Circuit Protection

### 2. Installation



#### Install:

- ✓ Ready tools and cables. Encourage you to matching the right cables. Ensure that the current density  $<4\text{mm}^2$  that is conducive to reducing the line voltage drop. Recommended: 30A with  $10\text{mm}^2$  cable. Check weather the installation sites compliance with the relevant

safety requirements. Please avoid the damp, dusty, there is a place flammable, explosive and corrosive gases use the controller to install.

- ✓ Install the controller into a fixed vertical plane. See section 5 of the pore size and pore spacing. In order to ensure a good thermal control conditions, please set aside each 10cm below the controller space.
- ✓ As shown on the right, connect the (1) Load, (2) Battery and (3) Solar Panel to the controller according to the order of (1) (2) (3). Pay attention to the load, battery, solar panel and controller of same polarity.
- ✓ Put into the external temperature sensor on the left of the controller (probe port). The temperature sensor should be similar space with battery. (Otherwise, the controller will control the parameters of all wrong temperature compensation.)
- ✓ If you have remote monitoring and control function, please insert one end of the included communication wire on the right of the controller (communication port), the other end to connect to the host computer.

3. Operation

Description of Button Function:



Battery Voltage      Battery Temp      Solar panel charge current      Load discharge current      Accumulated charging power (Ah)

Load working mode      High voltage disconnection (HVD)      Low voltage reconnection (LVR)



Low voltage disconnection (LVD)      Accumulated discharging power

View and set the parameters:

The controller will default entry "battery voltage" interface after correct power-on. This is the main interface. Use the buttonB could in turn visit the following parameters interface. If that interface could be set, long press the button" (>5seconds, numbers start flashing) To enter the parameter setting interface; set out the parameter interface after long press the button" again. (The numbers stops flashing)

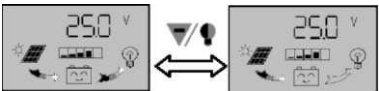
Battery Voltage of View

As shown on the right, displays the value for current battery voltage. This interface (based interface) displays charge status, discharge status, battery capacity and battery voltage.



The load on/off control

View the interface in the battery voltage could be used key T/f On, off the load  
In other interface, the key there is no such feature.



Environment Temperature of View

As shown on the right, displays the ambient temperature of the controller, the value used for temperature compensation on LVD function. The sensor must be plug in before using the controller.

Solar Panel charging current of View

As shown on the right, display the value of charging current from solar panel.

Load discharging current of View

As shown on the right, display the value of discharging current for Loads



**View the Accumulated charging power (Ah) by solar panel and back to zero**

As shown on the right, display the accumulated charging power from solar panel (Total ampere hour), long press the button & more than 5 seconds; the value will back to zero.



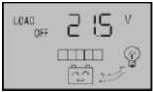
**View the Accumulated discharging power (Ah) by Load and back to zero**

As shown on the right, display the accumulated discharging power for loads (Total ampere hour), long press the button & more than 5 seconds; the value will back to zero.



**View and set the Low Voltage Disconnection Protection**

As shown on the right, shows the values for the LVD protection voltage. When the battery voltage is lower than protection voltage, the controller will disconnect the load circuit to prevent battery over-discharge. Long press the button\*-"1 (>5seconds) in this interface, numbers start flashing, that has entered the LVD setup interface, you can use the keyVt^ A to adjust the parameter. After long press the keyH (>5seconds) to exit parameter setting interface, the controller will save the settings.



**View and set the Low Voltage Reconnection**

As shown on the right, shows the values for the LVR voltage. Under the LVD protection controller, when the battery voltage is restored to the higher voltage than LVR voltage, the controller will re-connect the load circuit.



Long press the button4-"1 (>5seconds) in this interface, numbers start flashing, that has entered the LVR setup interface, you can use the keyVt^ A to adjust the parameter. After long press the key\*-"\* (>5seconds) to exit parameter setting interface, the controller will save the settings.

**View and set the High Voltage Disconnection**

As shown on the right, shows the values for the HVD voltage. When the battery voltage is reach to HVD voltage, the controller will cut off the charging circuit to prevent over-charging battery. Battery voltage drops under the value the charging circuit will be re-connected.



Long press the button1-"\* (>5seconds) in this interface, numbers start flashing, that has entered the HVD setup interface, you can use the keyVt^ A to adjust the parameter. After long press the key1-"1 (>5seconds) to exit parameter setting interface, the controller will save the settings.

**View and set Load Working Mode**

As shown on the right is Load working mode interface, different values represent different load working patterns.

24h said Normal Mode; in case of no fault state of the load is always in power.

1h~23h said Light Control with Time Control Mode, Load power after dark, and close the load according to the timer setting.

0h—said Light Control Mode, Load power after dark, turn off the load after drawn.



Long press the buttonH (>5seconds) in this interface, numbers start flashing, that has entered the Load Working Mode setup interface, you can use the keyVt^ A to adjust the parameter. After long press the keyH (>5seconds) to exit parameter setting interface, the controller will save the settings.

**4. Common Fault and Handling**

**LVD Protection and Treatment:**

Screen display as shown in the figure that the battery drops below the LVD protection voltage. The controller has entered the LCD protection state, load circuit has been disconnected. Use the solar panels recharge the battery or charger when the battery voltage reaches LVR voltage, the controller will resume on the load power supply, into the normal working state.



**Overload Protection and Treatment:**

Screen display (see the figure) and flashing expressed load loop circuit current sustained 60seconds than 1.5times rated current, the controller has entered into overload protection state. After reduce the load, press the buttonVt to restore power to the load.

**Short Circuit Protection and Treatment:**

Screen display (see the figure on the right) and flashing expressed there is short circuit on the load loop circuit. The controller has enter into Short Circuit Protection state  
Check the load if there is damage or not, if there is cable short circuit or not, after trouble shooting short press the buttonVtfor restoration.

**Solar Panel Fault and Treatment:**

Symbol flashing represent the controller was not detected solar panels within 24hours. Check if there is a connection from solar panel, check if there is an open circuit between solar panels with controller.

**Load Shock Fault:**

Open load if the Q flashing, that indicate the load impulse current is more than twice rated current of the controller. The controller is restarting the load in action many timers do.

**5.Technical**

<div>Model Data</div>	CM5024Z	CM5048		CM5024Z CM5048
Rated Current	50A 60A	50A 60A	Installation cable area.	< (16mm <sup>2</sup> )
Rated Voltage	12V/24V	48V	Operating Temperature	-10°C~60°C
Open Circuit Voltage of solar panel	<50V	<100V	Storage temperature	-30°C~70°C
Float Voltage	13.8V/27.6 V	55.2V	Humidity requirements	<90%,no condensation
Low Voltage Disconnection (LVD)	10.7V/21.4 V	42.8 V	Size	90 mmx188 mmx48 mm
Low Voltage Reconnection (LVR)	12.5V/25.0 V	50.0V	Mounting hole spacing	60 mmx178 mm --\$5
No load loss	<30mA	<	weight	360g
Loop Voltage Drop	<170mV	<		
Charging Mode	PWM mode			
Temperature Compensation	-4mV/Cell/°C			
Notes	Model suffix "Z" represent automatic identify system voltage level, "T" represent controller with remote monitoring.			